

**POWERING ELECTRONIC PHONES USING PIEZOELECTRONIC DISC
AS THE SOURCE OF ELECTRICITY**

A research study
Submitted to the faculty of the
Science High School, College of Education
Cavite State University
Indang, Cavite

In partial fulfilment of the
requirements for Research III

**MIKE LOUISE R. DIMAPILIS
CHRYZT AJJENEL M. DIKNO
GLENTH ALLEN D. TAUSA**
June 2018



Republic of the Philippines
CAVITE STATE UNIVERSITY
Don Severino de las Alas Campus
Indang, Cavite

COLLEGE OF EDUCATION
Science High School

Research Study Title : **POWERING ELECTRONIC PHONES USING
PIEZOELECTRONIC DISC AS THE
SOURCE OF ELECTRICITY**

Name of Researchers : **MIKE LOUISE R.DIMAPILIS**
CHRYZT AJJENEL M. DIOKNO
GLENTH ALLEN D. TAUSA

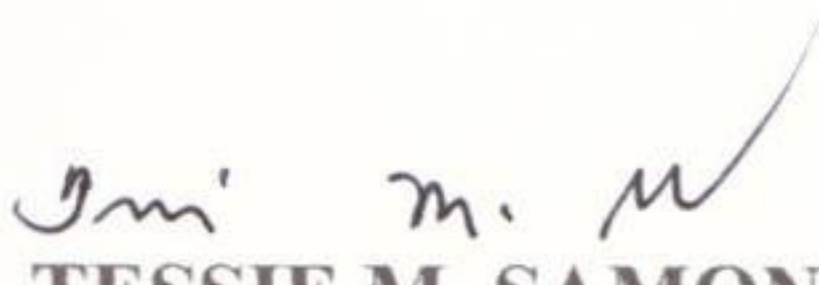
APPROVED:


EMERSON C. LASCANO
Adviser

Date


DANIELITO R. ESCAÑO
Technical Critic

Date


TESSIE M. SAMONTE
Principal

Date


ALFREDO A. VENZON
College Research Coordinator

5-29-18
Date


CECILIA B. BANAAG, Ph.D. 5.29.18
Dean Date


MA. CYNTHIA R. DELA CRUZ, Ph.D. _____
Director for Research Date

ABSTRACT

DIMAPILIS, MIKE LOUISE R., DIOKNO, CHRYZT AJJIENEL M., TAUSA, GLENTH ALLEN D. Powering Electronic Phones Using Piezoelectronic Disc as the Source of Electricity. Research Study (General Science Curriculum) Laboratory Science High School, College of Education, Cavite State University, Indang, Cavite, June 2018. Adviser: Prof. Emerson Lascaño

Piezoelectric disc using an alternative source of electricity was conducted at the Villa Corazon, Mataas na lupa, Indang, Cavite and Cavite State University Oval from February to April 2018. This study was conducted to utilize different number of Piezoelectronic disc as source of electricity in powering electronic phones in terms of weight, electricity input, and added percentage of charging in a battery.

Piezoelectronic disc was placed in the sole of the shoes and the disc was connected using wires and styro foams to prevent it from breaking. The female input connectors was attached at the end of the wire. The power bank and the multi meter was placed inside the belt bag and the male input connector was connected to multi meter and power bank. The electricity input was measured using multi meter. After putting the Piezoelectronic disc on the shoes, it was found out that Treatment 1 with only two discs had the least added weight while Treatment 3 with six Piezoelectronic disc had the most added weight. In terms of voltage input, Treatment 2 with four Piezoelectronic disc produced the highest voltage as compared to Treatment 1 and 3. Moreover, Treatment 2 produced the highest voltage. These could be attributed to the position of Piezoelectronic disc on the shoes. Treatment 2 had the better positioning in the sole of the shoes. Treatment 3 had the most number of Piezoelectronic disc, however it's positioning on the

shoes was complicated and not all of the Piezoelectronic disc was being pressed during walking.

TABLE OF CONTENTS

	Page
APPROVAL SHEET	ii
BIOGRAPHICAL DATA	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
LIST OF TABLES	x
LIST OF FIGURES	xi
INTRODUCTION	1
Statement of the Problem	3
Significance of the Study	3
Scope and Limitations of the Study	4
Time and Place of the Study	4
REVIEW OF RELATED LITERATURE	5
METHODOLOGY	17
Materials	17
Tools and Equipments	17
Research Design	17

Procedures in Making Piezoelectronic shoe	18
Data Collection	21
Statistical Analysis	21
RESULTS AND DISCUSIONS	22
Weight of the Shoe Containing different Amount of Piezoelectronic Disc	22
Electricity Input(volts) of the Different Number of Piezoelectronic Disc	23
Added Percentage of charging in the Battery	25
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	26
Summary	26
Conclusions	27
Recommendations	28
REFERENCES	29
APPENDICES	31

LIST OF TABLES

Table		Page
1	Weight of the shoe containing different amount of Piezoelectronic disc	22
2	Electricity input(volts) of each step in the limits of 10 steps by the different number of Piezoelectronic disc	23
3	Added percentage after walking a standard distance of 800 meters	25

LIST OF FIGURES

Figure		Page
1	Piezoelectronic disc	6
2	Piezoelectronic disc attached inside the shoes	6
3	Principles of operation of Piezoelectronic disc	7
4	Simple 3D-Printed device generates electricity from motion	9
5	Solar cell	10
6	Device that generates electricity out of thin air	11
7	Miniature device that can generate electricity by body movements	12

LIST OF APPENDIX TABLE

Appendix Table	Page
1 Trial 1 raw data of volts generated after walking 10 steps Replicate 1	33
2 Trial 1 raw data of volts generated after walking 10 steps Replicate 2	33
3 Trial 1 raw data of volts generated after walking 10 steps Replicate 3	34
4 Raw data of the weight of the shoes containing different amount of piezoelectronic disc	34
5 Raw data of the added percentage in powerbank treated by different number of piezoelectronic disc after walking a standard distance of 800m	35

LIST OF APPENDIX PLATES

Appendix Plates	Page
1 Making the design for Piezoelectronic disc	37
2 Attaching styrofoam to Piezoelectronic disc	38
3 Sewing the wires at the sole of the shoe	39
4 Attaching the sole of the shoe	40
5 Attaching the female input connector to wire	41
6 Sewing the female input connector at the sole of the shoe	42
7 Bag with the power bank digital multimeter and make input connector	43
8 Connecting the male input connector to female input connector for testing	44
9 Getting the electricity input	45
10 Getting the added percentage	46
11 Getting the weight of the product	47
12 Final product	48